Best Available Copy

Amendment A

<u>In the Claims</u>

Please delete claim 2, without prejudice.

Please amend claim 1 as follows:

1. A method for determining the location of the accumulation fluids in a subterranean formation, comprising:

determining a first velocity vector "V_x" for migration of fluid in a region of interest in the subterranean formation, the first velocity vector comprising attributes of speed and direction of flow of fluid in a first direction in the region of interest;

determining a second velocity vector "V_y" for migration of fluid in the region of interest, the second velocity vector comprising attributes of speed and direction of flow of fluid in a second direction in the region of interest;

extrapolating the velocity vectors to identify the fluid accumulation location; and

wherein the first and second velocity vectors are primarily functions of supplementary pressure "dP" in the region of interest, the permeability "c" of the region of interest, and the viscosity "u" of the fluid in the region of interest; and

the supplementary pressure is determined by identifying pressure gradients within the region, said region being characterized by a seismic image, said seismic image comprising a stacked time section representing horizons within said region, comprising:

a)   picking a first selected horizon from said seismic image;

b)   calculating a set of instantaneous amplitudes and frequencies for said first selected horizon;

c)   determining the average amplitude and frequency of said set of instantaneous amplitudes and frequencies;

d)   identifying pressure gradients associated with said instantaneous amplitudes and frequencies to generate a pressure gradient map, said pressure gradients corresponding to points at which said instantaneous amplitudes and frequencies vary from said average amplitude and frequency, wherein points at which said instantaneous amplitudes and frequencies are less than said average amplitude and frequency correspond to locations of relatively low pressure.

Please amend claim 3 as follows:

3. The method of claim 10 wherein said first selected horizon has associated traveltimes, and wherein said instantaneous amplitudes and frequencies are calculated by the Hillbert transformation using said traveltimes.

(Continued on next page.)

41

Amendments

The amendments set forth above are shown below in an interlined format to show where and how the claims have been amended, wherein deleted text is shown in square brackets and added text is shown in underline.

In the claims, claim 1 has been amended as follows:

1 (once amended).

2. A method for determining the location of the accumulation fluids in a subterranean formation, comprising:

determining a first velocity vector "V_x" for migration of fluid in a region of interest in the subterranean formation, the first velocity vector comprising attributes of speed and direction of flow of fluid in a first direction in the region of interest;

determining a second velocity vector "V_y" for migration of fluid in the region of interest, the second velocity vector comprising attributes of speed and direction of flow of fluid in a second direction in the region of interest;

extrapolating the velocity vectors to identify the fluid accumulation location; and

wherein the first and second velocity vectors are primarily functions of supplementary pressure "dP" in the region of interest, the permeability "c" of the region of interest, and the viscosity "u" of the fluid in the region of interest, and

the supplementary pressure is determined by identifying pressure gradients within the region, said region being characterized by a seismic image, said seismic image comprising a stacked time section representing horizons within said region, comprising:

a)   picking a first selected horizon from said seismic image;

b)   calculating a set of instantaneous amplitudes and frequencies for said first selected horizon;

c)   determining the average amplitude and frequency of said set of instantaneous amplitudes and frequencies;

d)   identifying pressure gradients associated with said instantaneous amplitudes and frequencies to generate a pressure gradient map, said pressure gradients corresponding to points at which said instantaneous amplitudes and frequencies vary from said average amplitude and frequency, wherein points at which said instantaneous amplitudes and frequencies are less than said average amplitude and frequency correspond to locations of relatively low pressure.

3(once amended).   The method of claim 1 [2] wherein said first selected horizon has associated traveltimes, and wherein said instantaneous amplitudes and frequencies are calculated by the Hillbert transformation using said traveltimes.

Remarks

Amendments to the Claims

The Examiner has indicated that claim 1 would likely be rejected as being indefinite under 35 U.S.C. § 112, but that the claim might be allowable if amended to include the limitations of claim 2. Accordingly, claim 1 has amended to include all of the limitations of claim 2 in order to put the claim in an allowable form. Claim 2 has been cancelled, and claim 3 has been amended to depend now from claim 1 (where claim 3 previously depended from claim 2).

The Applicants respectfully request that the claims now be allowed.

(Continued on next page.)